HUNTERS POINT NAVAL SHIPYARD,
COMMERCIAL DRYDOCK AREA
East of the intersection of Robinson Avenue & Fischer Drive
San Francisco
San Francisco County
California

HAER NO. CA-2273

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Department of the Interior
San Francisco, California 97104

HISTORIC AMERICAN ENGINEERING RECORD

Hunters Point Naval Shipyard, Commercial Drydock Area

HAER No. CA-2273

Location: Hunters Point Naval Shipyard, San Francisco, California
USGS Quadrangle Hunters Point, 1993
UTM Coordinates for historic area:
1 = 10 mE/556619 mN4175830 2 = 10 mE/556752 mN4175691
3 = 10 mE/556374 mN4175590 4 = 10 mE/556264 mN4175669
5 = 10 mE/556267 mN4175669

Present Owner: Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, California 92108-4310

Present Use: Vacant

Significance: Hunters Point Naval Shipyard, Commercial Drydock Area is significant at the state level for its important association with the development of commercial shipping and ship-repair in the San Francisco Bay area. The historic area is also a significant example of marine engineering, the work of master engineer, Howard C. Holmes, and a significant example of Neoclassical Revival architecture used for industrial buildings. Contributing elements include Buildings 140, 204, 205, and 207, and Drydocks 2 and 3.

Historians: Heather Norby and Toni Webb
JRP Historical Consulting, LLC
1490 Drew Avenue, Suite 110
Davis, CA 95618
530-757-2521
December 2009

Project Information: This project was undertaken to fulfill the requirements of the *Memorandum of Agreement Among The United States Navy, The Advisory Council for Historic Preservation and The California State Historic Preservation Officer Regarding the Interim Leasing and Disposal of Historic Properties on the Former Hunters Point Naval Shipyard, San Francisco, California.* Heather Norby and Toni Webb of JRP Historical Consulting, LLC (JRP) prepared this document for the Navy. Both Ms. Norby and Ms. Webb conducted fieldwork, contributed to architectural descriptions and the historic context. JRP conducted research at the California State Library, Hunters Point Naval Shipyard (Building 383), National Archives and Records Administration (San Bruno), San Francisco Public Library, San Francisco Maritime National Historical Park Library, and the BRAC PMO West Caretaker Site Office on Treasure Island. William B. Dewey produced the photography.

PART I. HISTORY, PHYSICAL DESCRIPTION, ENGINEERING AND OPERATIONS

For a detailed description and history of each individual element of the Hunters Point Naval Shipyard, Commercial Drydock Area, please refer to **HAER Nos. CA-2273-A**, **CA-2273-B**, **CA-2273-C**, **CA-2273-D**, **CA-2273-E**, **CA-2273-F**.

Technological Innovation/Engineering Achievement in Drydock Construction

The expansion of the commercial drydock facility at Hunters Point in the early twentieth century coincided with publication of an influential text on dock construction by Brysson Cunningham, a London engineer and expert on the subject. Writing from a north Atlantic perspective, Cunningham never directly addressed drydocks on the American west coast, however, his analysis did include some American drydocks. His work provides a solid, comprehensive look at the practice of dock engineering and construction in that period, as well as the history of drydock construction preceding this period.[1]

Drydocks, or graving docks, primarily function to provide a dry space for repair and maintenance of ships without prohibitive cost and effort. Early ships, if small enough in size, could be dragged ashore on an area of sloping sand to expose the underside of the ship. When too large in size, access could be gained by intentionally beaching a ship. In this method, practiced by the ancient Egyptians and Phoenicians, seamen anchored ships near shore at high tide and then left the ships high and dry as the tide receded. Beaching had obvious limitations; work could only occur in cycles, and limited suitable locations existed for employing this method. The process evolved to include erection of clay walls, earth dams, and temporary fencing around the beached ship to keep the water at bay. In its most sophisticated form, a "gridiron" was developed consisting of parallel beams laid over a masonry foundation in a tidal basin where a ship could be moored at high tide, and rest upon the grid as the tide ebbed. Beaching, in its various forms, proved efficient and effective for light ships and was still a common practice at the beginning of the twentieth century.[2]

The principle behind a graving, or drydock was a natural outgrowth of the beaching practice. In a graving dock, instead of removing the vessel from the water, the water is removed from the vessel. In its earliest incarnation, a natural inlet would be dammed. Evidence is unclear about when the first artificially excavated graving docks were constructed. It may have been a drydock constructed at Portsmouth, England in 1495 at the direction of Henry VII. This early example had timber walls backed with stone. In the following centuries modifications and advances were made to accommodate the increasing size and changing shapes of ships. Where the drydock floors had been bare earth, later examples had gridiron floors, or homogenous brick or masonry floors secured to piles to stabilize the drydock.[3]

---

[1] Brysson Cunningham, *A Treatise on the Principles and Practice of Dock Engineering* (London: Charles Griffin & Co., 1904).
[2] Cunningham, *Dock Engineering*, 462-3.
[3] Cunningham, *Dock Engineering*, 463; H.F. Cornick, *Dock and Harbour Engineering: Volume 1, The Design of Docks* (London: Charles Griffin & Co., 1958), 176.

Graving docks in America have a much more recent history. In 1840 the *Merchant's Magazine and Commercial Review* noted that "want of proper accommodation for vessels requiring repair is much felt by the shipping frequenting the American ports." The magazine cited the technical difficulty of construction and added operational expenses in locations where the perpendicular rise of tide is small as the reason for the lack of graving docks in American ports. The Navy had constructed the only graving docks that existed in the United States by 1840. America had no commercial graving docks at that time. Exercising excellent workmanship, the Navy constructed the granite drydocks at their Boston and Norfolk shipyards using high quality materials. They constructed other stone drydocks at New York in 1846 and Mare Island in 1891. By 1906, all four were judged by the American Society of Civil Engineers "to be in practically as perfect a state of preservation as ever."[4]

In the second half of the nineteenth century a debate emerged in the United States over the merits of stone versus wood graving docks. After the Navy meticulously constructed the first graving docks in the United States out of stone, two large timber graving docks were constructed in Brooklyn. The trend in drydock construction swayed toward timber for a number of years because of the lower expense and greater availability of timber. It was unusual for the era that the original drydock at Hunters Point, Drydock 1, was constructed of stone (1868). In 1885, Leveson Francis Vernon-Harcourt, explained that American builders of drydocks chose timber not only because of the lower costs associated with it compared to stone, but that timber drydocks could be "rapidly constructed, are less injured by frost, and drier and are more accessible with their narrow altars and gently sloping sides." Congressional authorization for the Navy to construct four large drydocks, two of timber, in response to the Spanish-America War, highlighted the debate. The Secretary of the Navy recommended against constructing timber drydocks, and the incident sparked an informal discussion within the American Society of Civil Engineers (ASCE). The ASCE strongly favored stone construction of drydocks, as did Brysson Cunningham. Congress reversed their decision and proceeded with plans to build all of the new drydocks of stone or masonry. Six years later, in his treatise on dock construction, Cunningham offered a scathing critique of the American practice of constructing timber drydocks. In direct response to the arguments set forth by Vernon-Harcourt, he stated that the contention "that timber-work is injured less than masonry by the severity of North American winters, strikes one as being untenable and even absurd…." He ultimately concluded that timber is "much inferior to stone or concrete" and that the fact that timber construction costs less is its only advantage.[5]

In the late nineteenth century, the United States became self conscious about the inferiority of not just their drydocks, but the nation's lack of substantive naval power. The *New York Times* reported in 1885 that a recent study had found that a single English shipyard had more drydocking facilities than all drydocks combined in the United States. In 1890 historian Alfred T. Mahan published his influential, *The Influence of Sea Power Upon History,* in which he

---

[4] Freeman Hunt, ed., *Merchants' Magazine and Commercial Review II* (New York: Freeman Hunt, 1840), 314; American Society of Civil Engineers, *Proceedings of the American Society of Civil Engineers* XXXII (New York: ASCE, 1906), 36-38.

[5] American Society of Civil Engineers, Proceedings, 36-38; Leveson Francis Vernon-Harcourt, Harbours and Docks: Their Physical Features, History, Construction Equipment, and Maintenance with Statistics as to their Commercial Development I (Oxford: Clarendon Press, 1885) 459; Cunningham, *Dock Engineering*, 477.

argued that a crucial factor in the British Empire's power was their strong navy. He called for the United States to increase the size and power of its navy to be prepared for conflict and to keep peace through providing a deterrent. When the Spanish-American War began in 1898, Congress became acutely aware the country's naval deficiencies and quickly began building ships and drydocks. After this, another period of concentrated drydock construction occurred during World War II.

Early Commercial Drydocking History of Hunters Point

Not long after the Gold Rush caused rapid settlement of the San Francisco bay, commercial interests identified Hunters Point as an ideal location for construction of a drydock because of its convenient location and geography. The peninsula itself was composed of green serpentine, a rock that is easily excavated, yet impervious to water. Additionally, the deep water approaches to the site made it readily accessible to large vessels. Recognizing these conditions, early developers organized themselves as the California Dry Dock Company in 1867. Partners in the venture included Lloyd Tevis, William Ralston, and Isaac Friedlander, key figures in California's economy at the time and all at least peripherally involved in shipping. Friedlander, for example, controlled much of the state's overseas wheat trade. Owning their own repair drydock allowed the partners to eliminate some of their business costs. The availability of a commercial drydock also made the San Francisco bay a more appealing trading port.[6]

California Dry Dock Company hired Alexis Von Schmidt, an influential nineteenth-century engineer, to design Drydock 1 for Hunters Point. The resulting structure was cut into the serpentine and lined with large timbers. It measured 462' long, 97' wide at the top, and 56' at the base. Massive blocks of granite quarried at Rocklin, northwest of Sacramento, formed the entrance of the drydock. Although construction activities for Drydock 3 obliterated Drydock 1 in 1916, drawings indicate that at least some of the granite from Drydock 1 remains at the site beneath extant piers. Newspapers announced that the "vast proportions" of this Drydock 1 would allow it to service any vessel currently afloat. Shipbuilders in the last quarter of the nineteenth century continually increased the size of vessels, so Drydock 1 did not maintain its competitive edge for long. It did, however, remain operational until 1916.[7]

Construction of Drydock 2, Buildings 204, 205

The San Francisco Dry Dock Company, successor of California Dry Dock Company, owned and operated the original Drydock 1 at Hunters Point at the turn of the twentieth century. Since construction of that original drydock at Hunters Point in 1868, ships had increased in size. In order to accommodate the larger commercial ships, San Francisco Dry Dock Company decided to construct a new, larger drydock at its site. The company offered well-established engineer Howard C. Holmes a position as chief engineer to design the new drydock, which he accepted, resigning his post as chief engineer of the California State Board of Harbor Commissioners.

---

[6] JRP Historical Consulting Services, *Historic Context and Inventory and Evaluation of Buildings and Structures, Hunters Point Shipyard, San Francisco*, September 1997.

[7] "The San Francisco Dry Dock," *Alta California*, August 19, 1867, 1; Navy Department, Naval Dry Docks, Hunters Point, *Tunnel Between Dry Docks No 2 and No 3,* Drawing No. 113928, 194[?], BRAC PMO West Caretaker Site Office, Yerba Buena Island.

Once Holmes had prepared plans and specifications for the new drydock, San Francisco Dry Dock Company opened construction bids late in October 1900 and awarded the contract to the City Street Improvement Company. Work began on January 9, 1901 and on February 1, 1903, the first vessel drydocked.

The new drydock, Drydock 2, was significantly larger than the old drydock at 750' long compared to 462'. While not the largest drydock in the world, its dimensions and engineering put it in the same class with the largest, most modern drydocks. The new drydock was not intended to replace Drydock 1, but to expand the Hunters Point facility. The Holmes plan called for the new drydock to be situated south of existing Drydock 1, with the axes of the two drydocks at about a 14 degree angle. The composition of the peninsula, green serpentine, provided an ideal location for excavating another drydock.[8]

Excavation work for Drydock 2 resulted in the demolition of the original pump house for Drydock 1. Holmes' plans called for a new steam generating power plant (Building 205) to serve both the old and new drydocks (**Photograph 14**). The building housed boilers and engines and was constructed of brick, in two sections, one 40' x 90' and the other 50' x 60'. In profile the form of the building suggested a steam locomotive, with the chimney contributing to the effect; the form also resembles early train stations with attached trainsheds. Neoclassical Revival in style, the arched windows and doorways, pilasters, cornices, eyebrow dormers, and Palladian-style louvered vent in the pediment echoed the stylistic elements popularized for industrial design at the Columbian Exposition in 1893. Functionally, the building housed the machinery that suctioned water out of the drydock and discharged it back to the bay. A suction tunnel connected the drydock chamber to the pump pit, beneath the engine room. A discharge tunnel extended east to the bay from the pump pit. As planned, the building only consisted of two sections; however, a third section has been present since at least 1916. Photographs dated in the mid-1910s through the early 1920s show an addition at the east end of the building with a shed roof and wood paneled exterior walls. By 1930 this addition had been removed and the current brick-clad, gable-roof addition was present. The addition served as the compressor house for the steam generating plant.[9]

Holmes' 1903 drawing placed Building 204, referred to as the "Gate House," in the same location as an existing building associated with Drydock 1, likely also a gatehouse (**Photograph**

---

[8] Howard C. Holmes, *Plan Showing Location of Old and New Dry Docks at Hunters Point San Francisco Cal, Property of San Francisco Dry Dock Co*, 1903; "Four Wharves to Cost Nearly Half a Million," *San Francisco Call,* October 11, 1900, 12; "Ready to Begin the Construction of a Drydock of Gigantic Size," *San Francisco Call*, November 18, 1900, 23.

[9] Carl W. Condit, *American Building Art: The Nineteenth Century* (New York: Oxford, 1960), 197-200; *Journal of the American Society of Naval Engineers* XII (Washington, D.C.: R. Beresford, 1900), 1033-1037; Holmes, *Plan Showing Location of Old and New Dry Docks at Hunters Point*, 1903; "Hunters Point Dry Docks as Seen From Army Airplane," *San Francisco Examiner*, May 6, 1923, sec. K, pg. 3; *Photograph*, 1930, RG 181, Records of Naval District and Shore Establishments, 12th Naval District, SF Naval Shipyard – Hunters Point, Historical Shipyard Photographic Collection, 1904-74, 9NS-S 181-95-010, Box 3, Folder Hunters Point Naval Shipyard Aerial Photograph Binder [1930-1969]; *Bethlehem Shipbuilding – Hunters Point Dry Dock Construction, December 10, 1916,* Photograph, San Francisco Public Library, Historic Photograph Collection, Folder: S.F. Districts – Hunters Point, Photo Nos. AAB-8917, AAB-8918; "The New 750-Ft. Dry-Dock of the San Francisco Dry-Dock Co., at Hunter's Point, Cal.,"; *Engineering News* (October 1900), 276-278.

16). A photograph dated 1903, after construction of Building 205, shows the old building, a small wood-paneled, gable-roof structure (**Photograph 8**). Building 204 then appears in another photograph dated 1904 (**Photograph 9**). Holmes' 1900 and 1903 drawings show a U-shaped tunnel underneath the Gate House, on either side of the Drydock 1 caisson. Upon opening a valve in the tunnel, water flooded the drydock, allowing the caisson to float out without capsizing. When Holmes designed plans for Drydock 2, he designed a new building, complementary to Building 205, to house the machinery that operated the tunnel.[10]

Drydock 2 required construction of a new floating steel caisson, or gate. Holmes also designed the new caisson, built by Union Iron Works. Rather than requiring a separate tunnel for flooding the drydock around the caisson, this caisson's design included thirteen, 30" valves that allowed water to flood the drydock through the caisson. Union Iron Works ceremoniously launched the gate on August 23, 1902 with Holmes and other engineers present. Union Iron Works had previously produced a smaller version of this caisson for the Navy shipyard at Mare Island. At the time of the launching, two other replicas of the Hunters Point caisson were under construction, commissioned by the Russian government. This caisson remained in operation until the Navy replaced it in 1952.[11]

At the end of January 1903, just a few days after completion of the drydock, the first vessel docked at Drydock 2 at Hunters Point. The battleship *Ohio* was successfully docked in the presence of an audience of engineers, W.F. Babcock, president of the drydock company, the other directors, and about 100 "friends" interested in the operation. As the water level receded in the drydock, workers scraped and cleaned marine undergrowth off the bottom of the vessel; the drydock was completely drained in two hours. The *San Francisco Call* reported after the successful docking, that the drydock was a "monument to mechanical skill of which any engineer might well be proud." It was also noted that although the *Ohio* was a large vessel at 388' in length, it looked small in the 750' long drydock, one of the largest in the world at the time.[12]

Union Iron Works and Bethlehem Steel/Shipbuilding & Turn of the Twentieth Century Shipbuilding and Repair

After San Francisco Dry Dock sold the Hunters Point facility to Bethlehem Steel in 1908, the drydocks operated under the Union Iron Works name until 1917, when owners changed it to

[10] Holmes, *Plan, Hunters Point*, 1903; *Photograph,* 1903, Box: 11, Folder: Hunters Point Naval Shipyard, Drydocks, Photographs, Multiple Dates, RG 181, NARA (San Bruno); USS *Ohio in dry dock at Hunter's Point, San Francisco, Calif., 19 July 1904*, Photo no. NH 60224, available at www.history.navy.mil/, accessed on July 21, 2009.

[11] "Will Launch Caisson," *San Francisco Call,* August 23, 1902, 10; "Mammoth Gate Floats on Bay," *San Francisco Call*, August 24, 1902, 26; "Launch of Water Gate for Dry Dock," *San Francisco Chronicle*, August 24, 1902, 12; "The New 750-Ft. Dry-Dock at Hunter's Point, Cal.," *Engineering News* (October 1900), 277; William Laxton, *The Civil Engineers and Architects Journal* XVII (London: 1854): 260; *Drydock No. 2, General*, Department of the Navy, Bureau of Yards & Docks, San Francisco, P.W. Drawing No. 116793, April 7, 1954.

[12] "Big Battleship Ohio Seems Lost in New Hunters Point Drydock," *San Francisco Call*, January 30, 1903, 12; "New Dry Dock Opens with Big Battleship as Guest," *San Francisco Chronicle*, January 30, 1903, 9.

Bethlehem Shipbuilding Ltd., Union Plant, Hunters Point. Union Iron Works had a long history in San Francisco and much has been written about the history of the company. The Donahue brothers, who failed to find riches in the gold mines, returned to San Francisco in 1849 to set up a blacksmith shop. The company, after changing hands and names numerous times, eventually became part of the largest shipbuilding operation in the country, Bethlehem Shipbuilding.[13]

After years of operating as an iron and brass foundry, Union Iron Works shifted its focus to shipbuilding as a result of owner, Irving M. Scott, taking a trans-Pacific voyage in 1880, visiting shipyards along the way. Because mining, which had provided much of the demand for iron and brass, was in decline, Scott saw an opportunity to move the business into steel ship building, an industry in its infancy on the Pacific coast. To accomplish a conversion to a shipbuilding operation, Scott and his partners purchased 32 acres in the Portrero District, about 2 ½ miles away from their previous site at First & Mission streets. At this time, they also reverted to the name Union Iron Works, after having operated for the previous five years under the name Prescott, Scott and Company. Although distant from Eastern markets, the company proceeded with confidence. Their years of manufacturing experience allowed them to quickly start vertically integrating their shipbuilding operation. Local craftsmen designed and produced much of the machinery and facilities. Unique to their operation was a hydraulic drydock, built in 1885. In 1885 the plant produced the *Arago*, the first steel vessel constructed on the west coast. Until 1902, they continued to build vessels, several of which played prominent roles in the Navy, particularly during the Spanish-American war.[14]

Union Iron Works' move into shipbuilding was part of an intense boom in shipbuilding in the United States at the close of the nineteenth century. An article in *Engineering Magazine* in July, 1900 claimed that industry experts estimated the growth of shipbuilding in the country had experienced an unprecedented increase between 1898 and 1900. In 1890, when Mahan critiqued the state of the Navy, it had been many years since the country's shipbuilding had been competitive with the shipbuilders of other nations. In the era of wooden ships, the United States had been competitive because of ample supplies of timber. When technological advances allowed iron and then steel to be used in shipbuilding, Great Britain dominated the industry because of their supply of the materials. When the United States increased its shipbuilding facilities and output at the end of the nineteenth century, it was as a revival.[15]

In 1900 an enumeration of all shipbuilding plants of any scale, manufacturing ships of any type, counted 325 shipyards, 250 located on the Pacific and Atlantic coasts, and 75 inland. Waldon

---

[13] "History of Bethlehem's San Francisco Yard, 1849-1949," *Pacific Marine Review* (October 1949), 27; "The First 100 Years," *Fortnight* 7, no. 7 (September 30, 1949), 20; "History of the San Francisco Yard, Bethlehem Steel Company, Shipbuilding Division," *The Argonaut*, August 29, 1947, 10; Hugo P. Frear, "History of Bethlehem's San Francisco Yard: Formerly the Union Iron Works," *Historical Transactions, 1893-1943* (New York: Society of Naval Architects and Marine Engineers, 1945), 238; Ens. Clifford H. Hollander USN (Ret.), "Bethlehem's San Francisco Yard," *Shipmate 41,* no. 6 (July-August 1978), 17; J. Richards, "The Union Iron Works," *Machinery* 6, no. 1 (September 1899), 1; Bethlehem Shipbuilding Corporation, LTD, *Bethlehem Ship Repair Facilities*, (Bethlehem: Bethlehem Shipbuilding Corp, 1924), 96-118; Works Progress Administration, Writer's Program, Northern California, *San Francisco: The Bay and Its Cities* (New York: Hastings House, 1940), 176-278.

[14] Ibid.

[15] Waldon Fawcett, "The Ship-Building Yards of the United States," *Engineering Magazine* (July 1900), 493-510.

Fawcett, writing in *Engineering Magazine,* divided the shipyards into four classes: shipyards building the largest and heaviest mercantile and naval tonnage, specialty shipyards, those devoted primarily to mercantile craft, and smaller plants producing smaller vessels. The writer considered only three US shipyards to fall into the first category, the Newport News Shipbuilding & Drydock Company of Newport News, Virginia, the William Cramp & Son Ship and Engine-Building Co. of Philadelphia, Pennsylvania, and the Union Iron Works (Portrero plant) of San Francisco.

Union Iron Works was the largest ship building plant on the Pacific Coast at the turn of the century. According to Fawcett, it embodied "the best and most progressive ideas," including a hydraulic lifting dock and hydraulic bending machine allowing the plant to produce turret rings for ships in a single piece.[16] After two decades of success in the shipbuilding industry, Union Iron Works sold to the United States Shipbuilding Company in 1902. This company failed within a short period and Union Iron Works was sold back to a reorganization committee who brokered a sale of the company to Charles Schwab on behalf of Bethlehem Steel Corporation in 1905. The acquisition of Union Iron Works' Portrero shipyard marked the beginning of Bethlehem Steel's transition into shipbuilding. The earthquake of April, 1906 seriously damaged the hydraulic-lift drydock at the Portrero plant. Because Bethlehem and Schwab wanted Union Iron Works to remain the premier shipbuilding operation on the west coast, they quickly sought a solution to the lost drydock. On November 11, 1908 Schwab, on behalf of Bethlehem Steel, purchased the drydocks at Hunters Point from San Francisco Dry Dock Company and Hunters Point became part of the Union Iron Works plant. At this time, Schwab also began negotiating a deal with the Navy for care of their warships at the facility.

At the time of the sale, the *San Francisco Call* claimed that Drydock 2 "is considered the finest in the world," noting that it had been able to handle 12 battleships with ease when the "Great White Fleet" was on the Pacific coast in 1907. Plans for the new drydock called for it to be 1,050' long and able to accommodate two battleships at the same time. The *Call* claimed that the addition of this drydock to the facility would make Hunters Point "the best equipped port in both hemispheres for repairing vessels." While this may have been an exaggeration given the competition among dockyards in this era, the defining characteristics of the drydock – deep water access, the chamber excavated in impervious green serpentine, and its size/capacity – made it a plausible ambition.[17]

The presence of shipbuilders like Union Iron Works, Risdon Iron Works, and Fulton Engineering and Shipbuilding in San Francisco Bay made the bay the most prominent, productive shipbuilding locale on the Pacific Coast. The availability of the drydocking facilities at Hunters Point was crucial to the port's productivity, allowing both commercial and naval ships to remain in the port for maintenance, overhaul, and repair. The *San Francisco Call* reported in December, 1901 that long gone were the days when all ships passing through the Golden Gate were built abroad. The customs house in San Francisco only counted 12 ships constructed outside of California for the calendar year 1900. The boom in San Francisco's ship building at the end of

[16] Fawcett, "The Ship-Building Yards of the United States," 494.
[17] "Hunters Point Drydock Merged with Union Iron Works," *San Francisco Call,* November 12, 1908, 1-2.

the nineteenth and early twentieth century coincided with a prosperous trend along the Pacific Coast in this period, and with the national interest in increasing naval power.[18]

Construction of Drydock 3 and Building 140

When Charles Schwab brokered the purchase of Hunters Point for Union Iron Works, Bethlehem Steel had grand initial plans for the site. They planned to move the shipbuilding plant at Portrero to Hunters Point, construct a large new drydock, and serve ships of the Navy's fleet. The combination of Union's established shipbuilding operation and San Francisco Dry Dock's repair facilities would create a shipbuilding giant on the Pacific Coast. By 1909 Schwab's initial plans had become more modest. Rather than consolidate the two Union Iron Works sites in the bay, he decided to operate Portrero and Hunters Point as two separate and distinct facilities, one for shipbuilding, and one for repair. The new corporation would be known as Union Iron Works Drydock Company with the stated purpose to "construct and operate drydocks, floating docks, wharves, warehouses, piers, factories and vessels." This name remained until 1917 when it was changed to Bethlehem Shipbuilding Co., Ltd (**Figure 1**).[19]

Dates of Ownership	Owner	Operating Name
1867 - 1901	California Dry Dock Company; San Francisco Dry Dock Company; South San Francisco Dry Dock Company	Hunters Point Dry Dock
1901 - 1908	South San Francisco Dry Dock Company (known as San Francisco Dry Dock Company)	Hunters Point Dry Docks
1908 - 1917	Bethlehem Steel	Union Iron Works, Hunters Point
1917 - 1939	Bethlehem Shipbuilding	Bethlehem Shipbuilding, LTD., Union Plant, Hunters Point
1939 - Present	U.S. Navy	Naval Shipyard Hunters Point; San Francisco Naval Shipyard; Hunters Point Naval Shipyard

Figure 1: Chronological listing of ownership of Hunters Point drydocks, 1867-present.

San Francisco Dry Dock Company started planning for construction of a third drydock prior to selling the site to Charles Schwab. In February, 1907, *The San Francisco Call* reported that the Navy was encouraging the San Francisco Drydock Company to construct the largest drydock in the world, capable of accommodating two battleships at once. Not until surveyors went to work at the site did information leak to the public about the proposed drydock and the Navy's role in

[18] "Growth of Shipbuilding in Industry in California," *San Francisco Call*, December 15, 1901, 53.
[19] "Schwab Drydock is Incorporated," *San Francisco Call*, February 2, 1909, 5; "Deed Filed for Hunter's Point," *San Francisco Chronicle*, November 16, 1909, 3.

the project. In July, 1907 the *San Francisco Chronicle* published a drawing showing the proposed drydock located north of original Drydock 1. Howard C. Holmes designed the plans for the new drydock and pump house. Although he would not reveal details of his plans, he did state the dimensions of the proposed drydock and supplied a table comparing it to other drydocks around the world. The proposed dimensions of Drydock 3 exceeded the world's largest drydock at Glasgow by 170' in length and 10' in depth. Sale of the site and negotiations with the Navy, however, delayed commencement of actual construction of the new drydock until 1916. Schwab could not justify the expenditure based on the commercial drydocking market alone; he needed a military subsidy to bring the project to fruition.[20]

In the early twentieth century the Navy sought to expand their facilities on the Pacific Coast. The only drydocks the Navy owned on the west coast were at Mare Island Naval Shipyard in Vallejo, California and Puget Sound Naval Shipyard in Bremerton, Washington. When the "Great White Fleet" arrived in San Francisco in 1907-1908 on their circumnavigation of the globe, the drydocks at Mare Island were too small and outdated to accommodate the vessels. Instead the Navy sent the fleet to Hunters Point for servicing. An act of Congress, approved June 30, 1914, authorized the Secretary of the Navy to enter into a contract with Union Iron Works for the use of the present drydocks and construction of a new one. Union Iron Works submitted a tentative draft for construction to the Committee on Naval Affairs in 1915. The tentative contract called for Union Iron Works to finance, construct and maintain for six years the new drydock in exchange for the Navy using the drydocks for its fleet. Once the Navy accepted this contract, Bethlehem began construction of Drydock 3. Viewed by the Navy as a temporary solution, Congress appointed a commission in 1916 led by Rear Admiral J.M. Helm, to study shore facilities on the Pacific Coast as sites for a new Navy shipyard. The Helm Commission determined that another shipyard was needed in the San Francisco Bay area. They closely studied Alameda, Yerba Buena Island, Richmond, and Hunters Point. The City of San Francisco submitted a proposal to the Navy promoting Hunters Point as the region's best option for a Navy shipyard. The Navy expressed concerns about the height of the promontory on Hunters Point and the need for fill around the point. Ultimately, the commission recommended building a shipyard in Alameda, but did not act upon it.[21]

When the Navy entered into contract with Union Iron Works in 1915 for construction of a new drydock at Hunters Point, plans still called for Drydock 3 to be constructed north of the two existing drydocks. Plans submitted by Holmes to South San Francisco Dock Company in 1915 showed the new drydock in that location as well. Hugo P. Frear also submitted plans and specifications for a new drydock north of Drydock 1. In 1916 Holmes submitted specifications for the new drydock for Union Iron Works that called for the obliteration of Drydock 1 and construction of a new drydock in its place, parallel to Drydock 2. The new drydock would have its own electrically powered pump house, rather than sharing a pump house like Drydocks 1 and

[20] "San Francisco to have the Largest Dry Dock in the World," *San Francisco Chronicle*, July 14, 1907, 3; "Largest Drydock in World to be Built Here," *San Francisco Call*, February 8, 1907, 16.
[21] Bamburg, 11-14.

2. Ultimately, Union Iron Works chose to execute this plan and obliterate Drydock 1 to construct Drydock 3.[22]

The specifications Holmes submitted in March 1916 outlined and divided into six separate parts the construction plans of the drydock, and the associated pumping plant, electric equipment, approaches, wharves, caisson, and other appurtenances. Union Iron Works awarded each part as a separate contract. They awarded the first and largest part which included excavation, concrete work, the power and transformer building, pump pit, and discharge and suction tunnels to San Francisco Bridge Company in May 1916. Charles Schwab remained involved in the process, calling John A. McGregor, president of Union Iron Works, east in May of 1916 for a conference on construction of the drydock. The newspapers had reported in February that Holmes had also travelled east on a matter related to the drydock, probably for a meeting with Schwab.[23]

The distinguishing aspect of the new drydock was its great size, which would make it the largest drydock on the Pacific Coast and among the largest in the world. Holmes' specifications called for the drydock to be 1,020' in length, 110' wide at the bottom, and 153' wide at the coping. A reinforced concrete tunnel of 12' inside diameter, extending north from the drydock to directly beneath the pump pit, connected Drydock 3 to the new pumping plant (Building 140).[24]

Although Holmes specified that the pumping plant designed to drain Drydock 3, should aesthetically and architecturally complement the existing pumping plant at the site (Building 205), the new plant had fundamental technological differences from the old. Constructed within less than twenty years of one another, the two pumping plants reflect technological advances made in the early twentieth century. While the older pumping plant had engines operated by steam boilers and a compressor, the new pumping plant was entirely electric.

Construction of the new drydock relieved Building 205 of pumping two drydocks, however Holmes engineered the new system so that Building 205 retained the ability to pump both drydocks in the event of emergency or mechanical failure in Building 140. A tunnel installed

---

[22] Congress, House, Hearings before Committee on Naval Affairs, *Estimates Submitted by the Secretary of the Navy,* 1915; Howard C. Holmes, *Report of Proposed Improvement of Land of South San Francisco Dock Company, 1915,* James D. Phelan Papers, Series 9, Carton 33, Folder 7, Bancroft Library; Howard C. Holmes, *Specifications for a Concrete Graving Dock for the Union Iron Works, Hunters Point, San Francisco,* 1916, M.M. O'Shaughnessy Papers, Subseries 1.3, Carton 10, Folder 22, Bancroft Library; "New Dry Dock for San Francisco," *Journal of the Society of Naval Engineers* XXVII (1915), 235-240.

[23] Holmes, *Specifications,* 1-2; "Dry Dock is to be Built by S.F. Firm," *San Francisco Chronicle,* May 2, 1916, 1; "Work is Begun on Monster Dry Dock at Hunter's Point," *San Francisco Chronicle*, February 20, 1916, 29.

[24] *Photograph,* 1903, Box: 11, Folder: Hunters Point Naval Shipyard, Drydocks. Photographs. Multiple Dates, RG 181, NARA (San Bruno); Howard C. Holmes, *Concrete Graving Dock for Union Iron Works Drydock Co., Foundation for Capstans and Outer Rail of Gantry Crane,* February 1916, Hunters Point Naval Shipyard (Building 383); Holmes, *Specifications*, 5-12;Holmes, *Specifications*, 14-19; Howard C. Holmes, *Concrete Graving Dock for Union Iron Works Drydock Co., General Plan of Pump and Transformer House,* February 1916, Hunters Point Naval Shipyard (Building 383); *Estimate for Special Allotment, Dry Dock 3, Replacement of Sump Drainage Pumps,* January 27, 1959, Ships and Facilities, Navy, Hunters Point Naval Shipyard (Building 383); Byron Jackson Iron Works, Inc., *48" Vertical Pumps, Foundation Plan*, August 11, 1916, Hunters Point Naval Shipyard (Building 383); Byron Jackson Iron Works, Inc., *15" Vertical Pumps, Foundation Plan*, September 16, 1916, Hunters Point Naval Shipyard (Building 383).

from the pump pit under Building 205 connected the pit to the new drydock (**Photograph 19**). Eliminating Drydock 1 caused Building 204 to lose its function as a gate house. The tunnel extending from the bay under the building was cut off and the section exiting the gatehouse toward the drydock was extended to intersect with the tunnel connecting the two drydocks. Holmes' specifications transformed Building 204 into a salt water pump house, equipped with one high pressure salt water pump to accommodate washing down and testing purposes.[25]

Holmes designed the pump and transformer building for Drydock 3, Building 140, to complement the existing power house for Drydock 2 in design, materials, and ornamentation. Specifications stated "all brick cornices, belt courses, arches and other ornamental brick work … must be laid up in the most neat and substantial manner and must follow the detail of the present power house." Architectural ornamentation and hardware, also designed to match the existing building, included mouldings, cornices, and gutters.[26] Holmes repeatedly made clear in the specifications that the work associated with the building was to be of superior quality and workmanship.[27]

Construction of Building 207

Bethlehem Shipbuilding constructed Building 207 as a tool and paint shop sometime between 1930 and 1941. Construction materials and design strongly resemble the east addition of Building 205. Both have low pitched, corrugated metal, gabled roofs, simple brick construction without ornamentation, and rectangular window and door openings. The Navy converted the building to a latrine and wash house in 1942. At the time of field inspection, plywood partition walls were present in the east end of the central room that may have been the accommodation for a request made during World War II for a room for women shipyard workers.[28]

Engineer, Howard C. Holmes, and His Body of Work

As noted earlier, San Francisco Dry Dock Company hired Howard C. Holmes to serve as chief engineer of the company. Holmes planned the expansion of their Hunters Point facility. Construction began in January, 1901 of a new drydock (drydock #2), a pump house (Building 205) to serve both the old drydock and the new, and a small gate house (Building 204).

Howard C. Holmes was in the middle of a distinguished career when San Francisco Dry Dock Company hired him as their chief engineer. He held that position until his death in 1921, however, he did not give up his private engineering consulting practice in San Francisco. Throughout his career, he was associated with street railway construction, port and terminal work, and became an internationally recognized authority on drydock construction.

---

[25] Holmes, *Specifications*, 10, 33.
[26] Holmes, *Specifications,* 19-22.
[27] Holmes, *Specifications,* 20.
[28] *Memorandum, Commander Millon to Commander Lewis, November 13, 1942*, Folder: A1-4 Public Works, Box 1, Hunters Point General Correspondence, RG 181, NARA (San Bruno); Barrett & Hilp Contractors, *Latrine & Wash House Floor Plan, Etc., January 31, 1942*, Hunters Point Naval Shipyard (Building 383), Public Works Drawing Nos. 10512-65, 10512-66; *U. S. Naval Drydocks Hunters Point, Layout of Yard June 30, 1940, History Plate II*, found in Edwin G. Schmidt, *History of the Development and Operation of a Naval Repair Yard at Hunters Point During World War II,* n.d.

Not quite a San Francisco native, Holmes was born in Massachusetts in 1854 and then relocated with his family to the San Francisco Bay area five years later. He attended public school and started his career surveying in his late teens. At nineteen years of age, he executed the contour survey for the development of Lake Chabot, designed to supply water to Oakland. At 21, he passed an examination for appointment as a US deputy surveyor and shortly after became assistant engineer of the State Board of Harbor Commissioners. He resigned that position to build the Alameda mole and depot, a ferry/railroad interchange, for the South Pacific Coast Railway Company in 1884. The buildings associated with the terminal burned in 1902 and were rebuilt the same year.[29]

Beginning in the late 1880s Holmes focused on street railway construction. In 1888 he designed the Ferries and Cliff House Railroad, a complex system of two cable car lines (Powell Street line, and Park and Cliff House line) operating out of one powerhouse along a complex system of conduits and drives. In 1892 he worked on the incorporation of the Clay-Sacramento route into the line. According to the American Society of Mechanical Engineers (ASME), the Ferries and Cliff House Railway "was one of the most complicated cable-car systems to run from a single station." Because of this engineering feat, the Ferries and Cliff House Railroad Powerhouse received the first Historic Mechanical Engineering Landmark designation from ASME in 1973. ASME named Holmes as the engineer responsible for the system.[30] The reputation Holmes gained for his work on complex systems earned him railway commissions in other cities. In the late 1880s and 1890s he designed cable railways in Portland, Spokane, and Seattle and electric railways in Stockton, and Sacramento. Returning to his work in San Francisco, he designed an extension of the Union Street Cable Railroad from Fillmore to the Presidio.[31]

By 1892, the State Board of Harbor Commissioners of California appointed Holmes to a four year term as chief engineer where he served until his resignation in 1901. When reappointed in 1896, the *San Francisco Chronicle* reported that "his ability as an engineer is universally recognized." During his tenure as chief engineer, he built the water terminals for all of the railroads running into San Francisco, except the Southern Pacific lines. Southern Pacific did, however, use freight and passenger hoists invented by Holmes at their terminals. Serving as chief engineer, he and chief architect Edward Swain designed the Union ferry terminal (Ferry Building) which opened in 1898 and after rehabilitation in the early 2000s remains an iconic and

---

[29] George W. Hilton, *American Narrow Gauge Railroads,* (Stanford: Stanford UP, 1990), 336-337; John P. Young, *Journalism in California: Pacific Coast and Exposition Biographies* (San Francisco: Chronicle Publishing, 1915) 277; *Golden Jubilee: Souvenir of the 50th Anniversary of the Discovery of Gold in California*, (San Francisco: The Stanley-Taylor Co., 1900?), 33; "In Memoriam, Howard Carleton Holmes", in *San Francisco Bay Marine Piling Survey, Second Annual Progress Report, January 15, 1922*, accessed online July 20, 2009 at www.archive.org/stream/sanfranciscobaym00sanfrich/sanfranciscobaym00sanfrich_djvu.txt; Benjamin Shannon Allen, ed., *California from 1769 – 1909: An Illustrated History Issued in Commemoration of the Portola Festival* (San Francisco, 1910); *The National Cyclopaedia of American Biography,* Supplement 1, (New York: James T. White & Co., 1910), 194.

[30] American Society of Mechanical Engineers, *Historic Mechanical Landmark #1, Ferries & Cliffhouse Cable Railway Power House (1887)*, accessed online on July 21, 2009 at www.asme.org/Communities/History/Landmarks/Ferries_Cliffhouse_Cable.cfm; Cable Car Museum, Cable Car Heritage, *The Ferries & Cliff House Railway – 1888*, accessed online on July 21, 2009 at www.cablecarmuseum.org/co-ferries-cliffhouse.html.

[31] Young, *Journalism in California,* 277; *Golden Jubilee,* 33; Allen, ed., *California from 1769-1909.*

important San Francisco landmark. During this time he also invented a method of building cylindrical concrete and wooden piles for wharves, designed to resist the teredos and limnoria that bored through wood structures in the bay. His invention led to a dispute with the Harbor Commission over patent rights and royalties. Despite the fact that the court did not grant him royalties, the method appears to be a significant innovation in designing wharf supports for the bay. His original design was improved upon in 1908 and others followed later with their own patents for wharf support designs.[32]

Holmes resigned from the Harbor Commission in 1901 to serve as chief engineer for the San Francisco Dry Dock Company, where he designed Drydocks 2 and 3 and their associated buildings (Buildings 205, 204, and 140), and focus on his private engineering consulting firm in San Francisco. His work on Drydock 2 was widely recognized as superb and in 1904 the Boston Harbor and Land Board commissioned him to report on the respective merits of graving and floating docks. The Canadian government commissioned him to design their drydock in Victoria.[33]

Holmes also served as chief engineer of the San Francisco, Oakland & San Jose Railroad Company which formed in 1903 in direct competition with commuter service offered by Southern Pacific. Like the South Pacific Coast Railway Company, the new route, quickly dubbed the "Key System" or the "Key Route," used both trains and ferries to move commuters around the bay. Holmes designed all of the marine structural work for the system's terminal mole, the Oakland Mole. The mole extended three miles into San Francisco Bay from Oakland and served as a ferry/railroad exchange. His railroad work also included a large part of the Oakland, Alameda, and Piedmont Railroad. In 1915 he engineered the yacht harbor and the freight and passenger terminals for the Panama-Pacific Exposition in San Francisco.[34]

During his career as a civil engineer in San Francisco the scope of Holmes' work encompassed many aspects of the city's built environment, including ferry terminals, wharves, harbors, railroad lines, and drydocks. His work was often noted for its innovation and complexity and his consultation was sought, particularly on drydock construction, by engineers around the country. Holmes died in 1921. In their memorium, the San Francisco Bay Marine Piling Committee stated that "no other engineer in this region had probably a wider or more intimate acquaintance with every detail of the complex history of port and waterfront development in this region than

---

[32] Board of the State Harbor Commissioners, *Biennial Report,* San Francisco, July 1, 1898; *San Francisco Chronicle,* August 28, 1896; San Francisco Bay Marine Piling Committee, *In Memoriam, The San Francisco Bay Marine Piling Survey, Second Annual Progress Report* (San Francisco: San Francisco Bay Marine Piling Committee, January 15, 1922), 10-11; Thomas S. Williams, "Concrete Wharf Supports in San Francisco Harbor," *Professional Memoirs* 9, no. 46 (July-August 1917), 393-398; "State Must Pay Holmes Royalty," *San Francisco Chronicle,* April 13, 1902, sec. A, pg. 24; "Holmes Loses His Patent Suit," *San Francisco Chronicle*, March 3, 1903, 9.

[33] "Chief Engineer Howard Holmes Soon to Resign," *San Francisco Call,* May 20, 1900, 23; "Chief Engineer Holmes Resigns His Position," *San Francisco Chronicle,* February 21, 1901, 12; SF Bay Marine Piling Committee, *In Memoriam*, 1922.

[34] Young, *Journalism in California,* 277; "Famous S.F. Engineer Ends Useful Career," *Mountain Democrat*, November 5, 1921, 6.

had Mr. Holmes." Hunters Point Naval Shipyard, Commercial Drydock Area is an important example of a complete system designed by this engineer.[35]

Hunters Point during and after World War II

In the late 1930s, the Navy again took interest in acquiring Hunters Point in response to war in Europe and the Pacific. A congressional act in 1939 allowed Bethlehem Shipbuilding to sell Hunters Point to the Navy. The legislation called for Hunters Point to be run as an annex of the Mare Island Naval Shipyard in Vallejo, requiring the commanding officer at Hunters Point to consult the commanding officer at Mare Island on decisions involving facilities, personnel policies, and budget. The Navy immediately leased the property back to Bethlehem with a provision that the Navy could cancel the lease in the event of an emergency. During the lease to Bethlehem, the Navy prepared plans for the site and began the first phases of construction. There were few structures present on Hunters Point at this time other than the drydocks and their associated buildings. The Navy cancelled the lease in October 1941 and took possession on December 18, 1941, less than two weeks after the attack on Pearl Harbor. From this point forward, mobilization for World War II occurred rapidly at Hunters Point, now named US Naval Drydocks, Hunters Point. Between December 18 and 30, the Navy transferred 108 mechanics and helpers from Mare Island Naval Shipyard to Hunters Point. Between December 18, 1941 and September 2, 1945, 661 ships drydocked at Hunters Point. While certainly a contributor to the war effort, Pearl Harbor and Mare Island served as the main ship repair yards during the war. The Pearl Harbor Naval Base serviced 7,000 ships during the war, and Mare Island 1,227. Having operated as a commercial drydock before the war, in 1941 Hunters Point was not prepared for the volume of repairs and maintenance jobs the military needed during wartime.[36]

During WWII, the Navy rapidly transformed Hunters Point from the commercial drydock operation it had been for over seventy years to a naval shipyard. The war period was characterized by physical expansion of the point itself by filling the bay, land acquisition, new building, and modernizing and rehabilitating existing drydocks and buildings.[37]

The Navy renamed Hunters Point facility the Naval Shipyard Hunters Point and placed under its own commander by the end of 1945, making it an autonomous command within the San Francisco Naval Base. Immediately following the end of World War II, the shipyard, like most naval shipyards, took part in Operation Magic Carpet, aiding in return from overseas of US service personnel. In November 1945 the Navy re-designated the shipyard a separate component of the San Francisco Naval Base and a month later renamed it the San Francisco Naval Shipyard.

---

[35] SF Bay Marine Piling Committee, *In Memoriam*, 1922.

[36] JRP, *Historic Context, Hunters Point,* 15-16; Bonnie L. Bamburg, *Historical Overview of Hunters Point Annex Treasure Island Naval Base and Descriptions of Properties that Appear Eligible for Listing in the National Register of Historic Places*, Submitted to Western Division, Naval Facilities, Engineering Division, 1988, 38; "San Francisco Naval Shipyard in Permanent Status," *Pacific Marine Review* (June 1947): 63-65, 120.

[37] *Drydock No. 2, General*, April 7, 1954; Austin Willmott Earl, Consulting Engineer, *Boiler House Reconstruction Details*, March 14, 1942, P.W. Drawing Nos. 113923, 113926, 113927; *W.M. Johnson to Bureau of Yards and Docks*, October 20, 1943, Folder: N23 Generating Plants, Box: 27, Hunters Point Naval Shipyard General Correspondence, RG 181, National Archives and Records Administration (San Bruno); *Memorandum, Production Officer to Public Works Officer,* September 30, 1943, Folder: N23 Generating Plants, Box 27, Hunters Point General Correspondence, RG 181, NARA (San Bruno).

The facility continued to serve as a docking area for Navy ships for repair, overhaul, maintenance and conversion in the years after war. Other functions were transferred to the facility, including Ship Salvage Base, 12th Naval District and the Radiological Defense Laboratory (predecessor of the US Naval Radiological Defense Laboratory), set up along the southern waterfront. Beginning in the early 1950s the shipyard began to focus on submarine repair. It was in this capacity that the shipyard provided support to the fleet during the Korean and Vietnam conflicts.[38]

In April 1965, San Francisco Naval Shipyard command merged with Mare Island Naval Shipyard. Renamed the San Francisco Bay Naval Shipyard, it became the largest shipyard complex in the world, employing over 20,200 civilian employees and over 9,400 military personnel. This configuration ended in 1970 when both shipyards returned to autonomous operations. In 1974, the Navy deactivated the shipyard and leased the facility to private industry; however, the Navy continued to station several of its ships at Hunters Point. In 1986, the facility was transferred to Naval Station Treasure Island before Mare Island Naval Shipyard assumed full command in 1987. In 1991, the Base Realignment and Closure (BRAC) Commission identified Hunters Point for closure. Over the next decade, the Navy and City and County of San Francisco negotiated terms for the lease and subsequent transfer of the facility. In 2005, the Navy transferred Parcel A to the city.[39]

[38] Black, 11; Bamburg, 44-45.
[39] JRP, 27-28; Black, 11-12; "San Francisco Naval Shipyard," *Pacific Marine Review*, 63-65, 120.

PART II: SITE INFORMATION

The former Hunters Point Naval Shipyard is located on the western shore of San Francisco Bay, near the southeastern corner of the City and County of San Francisco, approximately two miles east of US101 and 4.5 miles southeast of the San Francisco-Oakland Bay Bridge. The Hunters Point Naval Shipyard, Commercial Drydock Area is sited at the easternmost point of the facility, within Parcels B and C of the Hunters Point Shipyard. The historic area is generally bounded by Lockwood Street to the west, and Spear and Fisher avenues to the south and southwest, respectively. The historic area includes six contributing buildings and structures (Drydock 2, Drydock 3, Building 140, Building 204, Building 205, and Building 207) constructed between 1901 and 1939; two non-contributing buildings (Building 206 and 208) are present within the boundaries of the historic area. Remnants of capstans, crane tracks, and bollards are present, however, these appurtenances have been heavily altered and/or replaced and are not contributing elements to the historic area. Two concrete drydocks sited parallel to one another form the core of the historic area. Buildings 205, 204 and 207 are located between Drydocks 2 and 3, while Building 140 is located on the north side of Drydock 3. Generally, the buildings contributing to the historic area are of concrete or brick construction, with gable roofs and concrete foundations and designed in Neoclassical Revival style. The exception is Building 207, which is utilitarian in design. Otherwise, few buildings or structures are extant in the immediate vicinity of the historic area.

PART III: SOURCES OF INFORMATION

Published Sources

American Society of Civil Engineers. *Proceedings of the American Society of Civil Engineers,* XXXII. New York: ASCE, 1906.

Allen, Benjamin Shannon, ed. *California from 1769-1909: An Illustrated History Issued in Commemoration of the Portola Festival.* San Francisco: 1910.

Bethlehem Shipbuilding Corporation, Ltd. *Bethlehem Ship Repair Facilities.* Bethlehem, Pennsylvania: Bethlehem Shipbuilding Corp., 1924.

Black, Steven R. "Mare Island Naval Shipyard." Historic American Engineering Record for Hunters Point Naval Shipyard, Drydock No. 4, HAER No. CA-181-A, (April 1994).

Board of the State Harbor Commissioners. *Biennial Report.* San Francisco: 1898.

Condit, Carl W. *American Building Art: The Nineteenth Century.* New York: Oxford, 1960.

Congress. House. Hearings before Committee on Naval Affairs. *Estimates Submitted by the Secretary of the Navy.* 1915.

Cornick, Henry F. *Dock and Harbour Engineering: The Design of Docks, v. 1.* London: Charles Griffin & Co., 1958.

Cunningham, Brysson. *A Treatise of the Principles and Practice of Dock Engineering.* London: Charles Griffin & Co., 1904.

Fawcett, Waldon. "The Ship-Building Yards of the United States." *Engineering Magazine* (July 1900).

"The First 100 Years." *Fortnight* 7, no. 7 (September 30, 1949).

Frear, Hugo P. "History of Bethlehem's San Francisco Yard: Formerly the Union Iron Works." In *Historical Transactions, 1893-1943.* New York: Society of Naval Architects and Marine Engineers, 1945.

Golden Jubilee: Souvenir of the 50th Anniversary of the Discovery of Gold in California. San Francisco: The Stanley-Taylor Co., 1900[?].

Hilton, George W. *American Narrow Gauge Railroads.* Stanford: Stanford UP, 1990.

"History of Bethlehem's San Francisco Yard, 1849-1949." *Pacific Marine Review* (October 1949).

Hollander, Ens. Clifford H. USN (Ret.). "Bethlehem's San Francisco Yard." *Shipmate* 41, no.6 (July-August 1978).

Hunt, Freeman, ed. *Merchants' Magazine and Commercial Review II.* New York: Freeman Hunt, 1840.

Journal of the American Society of Naval Engineers, XII. Washington D.C.: R. Beresford, 1900.

Laxton, William. *The Civil Engineers and Architects Journal,* XVII. London: 1854.

The National Cyclopaedia of American Biography Supplement 1. New York: James T. White & Co., 1910.

"The New 750-Ft. Dry-Dock of the San Francisco Dry-Dock Co., at Hunters Point, Cal." *Engineering News* (October 1900).

"New Dry Dock for San Francisco." *Journal of the Society of Naval Engineers,* XXVII (1915).

Richards, J. "The Union Iron Works." *Machinery* 6, No. 1 (September 1899).

"San Francisco Naval Shipyard in Permanent Status." *Pacific Marine Review,* (June 1947).

"US Naval Drydocks, Hunters Point." *Pacific Marine Review,* (October 1945).

Vernon-Harcourt, Leveson Francis. *Harbours and Docks: Their Physical Features, History, Construction Equipment, and Maintenance with Statistics as to their Commercial Development 1.* Oxford: Claredon Press, 1885.

Williams, Thomas S. "Concrete Wharf Supports in San Francisco Harbor" in *Professional Memoirs* 9, No. 46 (July-August 1917).

Works Progress Administration, Writer's Program, Northern California. *San Francisco: The Bay and Its Cities*. New York: Hastings House, 1940.

Young, John P. *Journalism in California: Pacific Coast and Exposition Biographies*. San Francisco: Chronicle Publishing, 1915.

Unpublished Sources

Bamburg, Bonnie L. *Historical Overview of Hunters Point Annex Treasure Island Naval Base and Descriptions of Properties that Appear Eligible for Listing in the National Register of Historic Places*. Submitted to Western Division, Naval Facilities, Engineering Division. 1988.

JRP Historical Consulting Services. *Historic Context and Inventory and Evaluation of Buildings and Structures, Hunters Point Shipyard, San Francisco*. September 1997.

Schmidt, Edwin G. "History of the Development and Operation of a Naval Repair Yard at Hunters Point During World War II." Unpublished, n.d.

Archival Sources

National Archives and Record Administration – Pacific Region (San Bruno):
Record Group 181. Records of Naval Districts and Shore Establishments. Hunters Point General Correspondence.

Bancroft Library:
James D. Phelan Papers, Series 9, Carton 33, Folder 7.

M.M O'Shaughnessy Papers, Subseries 1.3, Carton 10, Folder 22.

Water Resources Center Archives:
Charles Derleth Papers, Box 18, Folder 96.

Naval Sources

Hunters Point Naval Shipyard, Building 383

Base Realignment and Closure Program Management Office West, Caretaker Site Office, Yerba Buena Island.

Naval History and Heritage Command

Newspapers

Alta California

The Argonaut

Mountain Democrat

New York Times

The San Francisco Call

San Francisco Chronicle

San Francisco Examiner

Historic Photographs

The following photographs were reproduced from Records of the 12th Naval District, Hunters Point Naval Shipyard, San Francisco, CA contained in Record Group 181, Records of the Naval Districts and Shore Establishments, at the National Archives and Records Administration, San Bruno:

"Drydock at Hunters Point." June 5, 1941. Box 1.

"1908." MSR-69051-6-67 SFNS, Box 11.

"Hunters Point Drydock, SF Looking SW Alt. 1000'." May 13, 1942. Box 2.

"Mr. Hogkins [sic.] Engineer – Builder of DD #2." 1903. Box 11.

"Aerial view, circa 1930." Box 3.

The following photograph was reproduced from the San Francisco Maritime National Historical Park:

"Passenger Vessel President Coolidge Dry-Docking, San Francisco." April 5, 1932. Bethlehem Shipbuilding Collection, P82-125a.0857n1.

Maps and Drawings

Barrett & Hilp Contractors. "Latrine & Wash House Floor Plan, Etc." Public Works DrawingNo. 113485. San Francisco, January 31, 1942. Hunters Point Naval Shipyard (Building 383).

Barrett & Hilp Contractors. "Latrine & Wash House, Elevations." Public Works Drawing No. 113486. San Francisco, January 31, 1942. Hunters Point Naval Shipyard (Building 383).

Byron Jackson Iron Works, Inc. "48" Vertical Pumps, Foundation Plan." August 11, 1916, Hunters Point Naval Shipyard (Building 383).

_____. "15" Vertical Pumps, Foundation Plan." September 16, 1916, Hunters Point Naval Shipyard (Building 383).

Earl, Austin Willmott, Consulting Engineer. "Boiler House Reconstruction, Platforms and Stairs." P.W. Drawing No. 113923. San Francisco, March 14, 1942. BRAC PMO West Caretaker Site Office, Yerba Buena Island.

Earl, Austin Willmott, Consulting Engineer. "Boiler House Reconstruction Details." San Francisco, March 14, 1942. P.W. Drawing No. 113926. BRAC PMO Caretaker Site Office, Yerba Buena Island.

Earl, Austin Willmott, Consulting Engineer. "Boiler House Reconstruction, Roof Plan and Sections." San Francisco, March 14, 1942. P.W. Drawing No. 113927. BRAC PMO Caretaker Site Office, Yerba Buena Island.

Holmes, Howard C. *Concrete Graving Dock for Union Iron Works Drydock Co., Foundation for Capstans and Outer Rail of Gantry Crane.* February 1916. Hunters Point Naval Shipyard, Building 383.

_____. *Concrete Graving Dock for Union Iron Works Drydock Co., General Plan of Pump and Transformer House.* February 1916. Hunters Point Naval Shipyard, Building 383.

_____. *Plan Showing Location of Old and New Dry Docks at Hunters Point San Francisco, Property of San Francisco Dry Dock, Co.* 1903. Water Resources Center Archives, Berkeley, California.

U.S. Department of the Navy, Bureau of Yards & Docks. "Drydock No. 2, General." P.W. Drawing No. 116793. San Francisco, April 7, 1954. BRAC PMO Caretaker Site Office, Treasure Island.

_____. "Drydock No. 3, General." P.W. Drawing No. 116794, San Francisco, April 7, 1954. BRAC PMO West Caretaker Site Office, Yerba Buena Island.

_____. "Drydock No. 3, Cross Sections." P.W. Drawing No. 116947, Mare Island, April 7, 1954. BRAC PMO West Caretaker Site Office, Yerba Buena Island.

_____. "Drydock No. 3, Longitudinal Section." P.W. Drawing No. 116790, Mare Island, April 7, 1954. BRAC PMO West Caretaker Site Office, Yerba Buena Island.

_____. "Location & Details of Cleats at D.D. #2 (M.I.5) & D.D. #3 (M.I.6), Naval Drydocks, Hunters Point, Calif." P.W. Drawing No. 114689, Mare Island, April 9, 1943. BRAC PMO West Caretaker Site Office, Yerba Buena Island.

_____. "Location Plan for New Capstans at Drydocks 2 & 3, Hunters Point, Calif." P.W. Drawing No. 114691, Mare Island, n.d. BRAC PMO West Caretaker Site Office, Yerba Buena Island.

U.S. Naval Drydocks, Hunters Point. "Pump House – Bldg. 140, General Arrangement." P.W. Drawing No. 115792. San Francisco, November 1945. BRAC PMO West Caretaker Site Office, Yerba Buena Island.

Electronic Sources

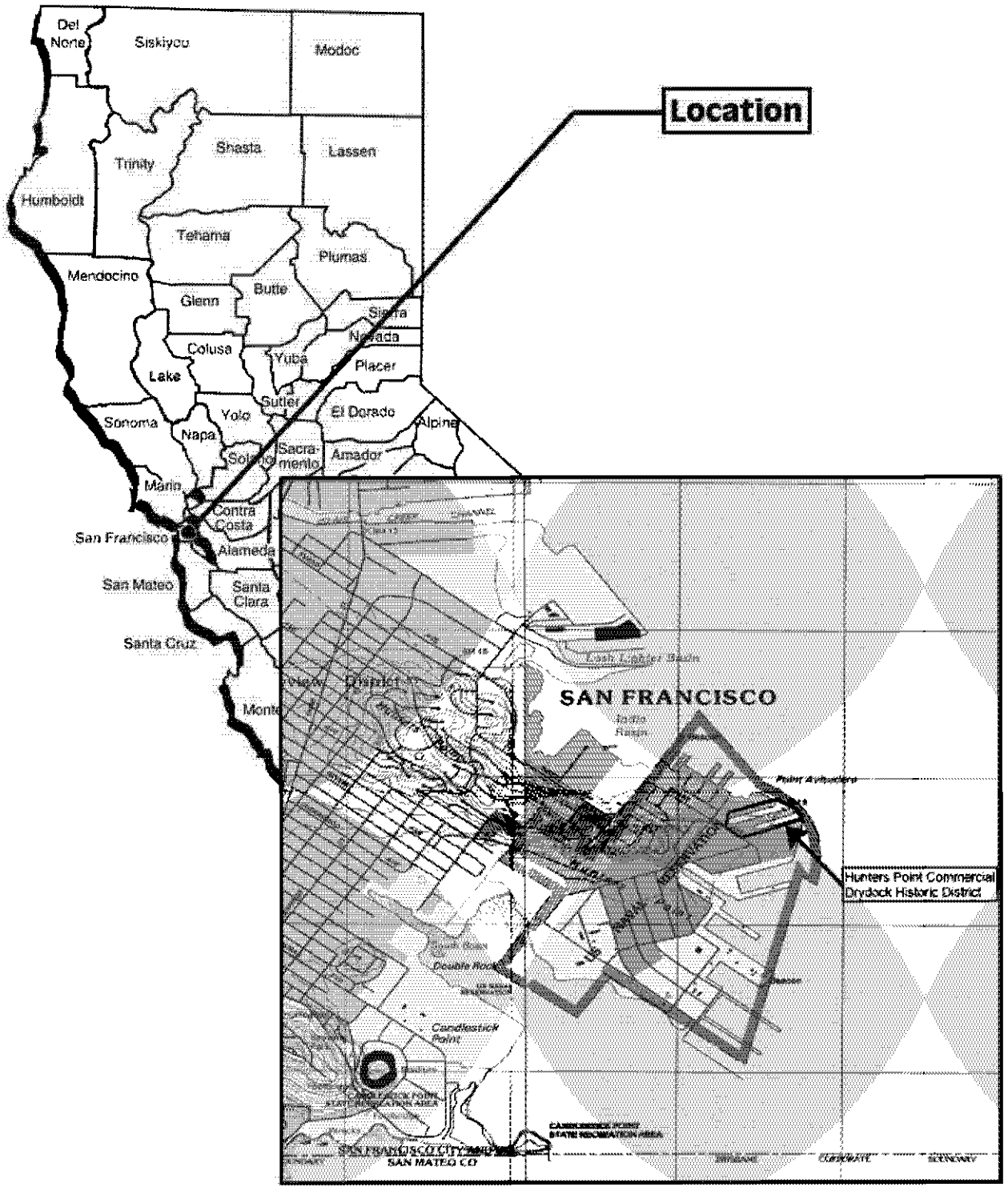
American Society of Mechanical Engineers. *Historic Mechanical Landmark #1, Ferries & Cliffhouse Cable Railway Power House (1887.)* Available at www.asme.org/Communities/History/Landmarks/Ferries_Cliffhouse_Cable.cfm.

Cable Car Museum. Cable Car Heritage. *The Ferries & Cliff House Railway – 1888.* Available at www.cablecarmuseum.org/co-ferries-cliffhouse.html.

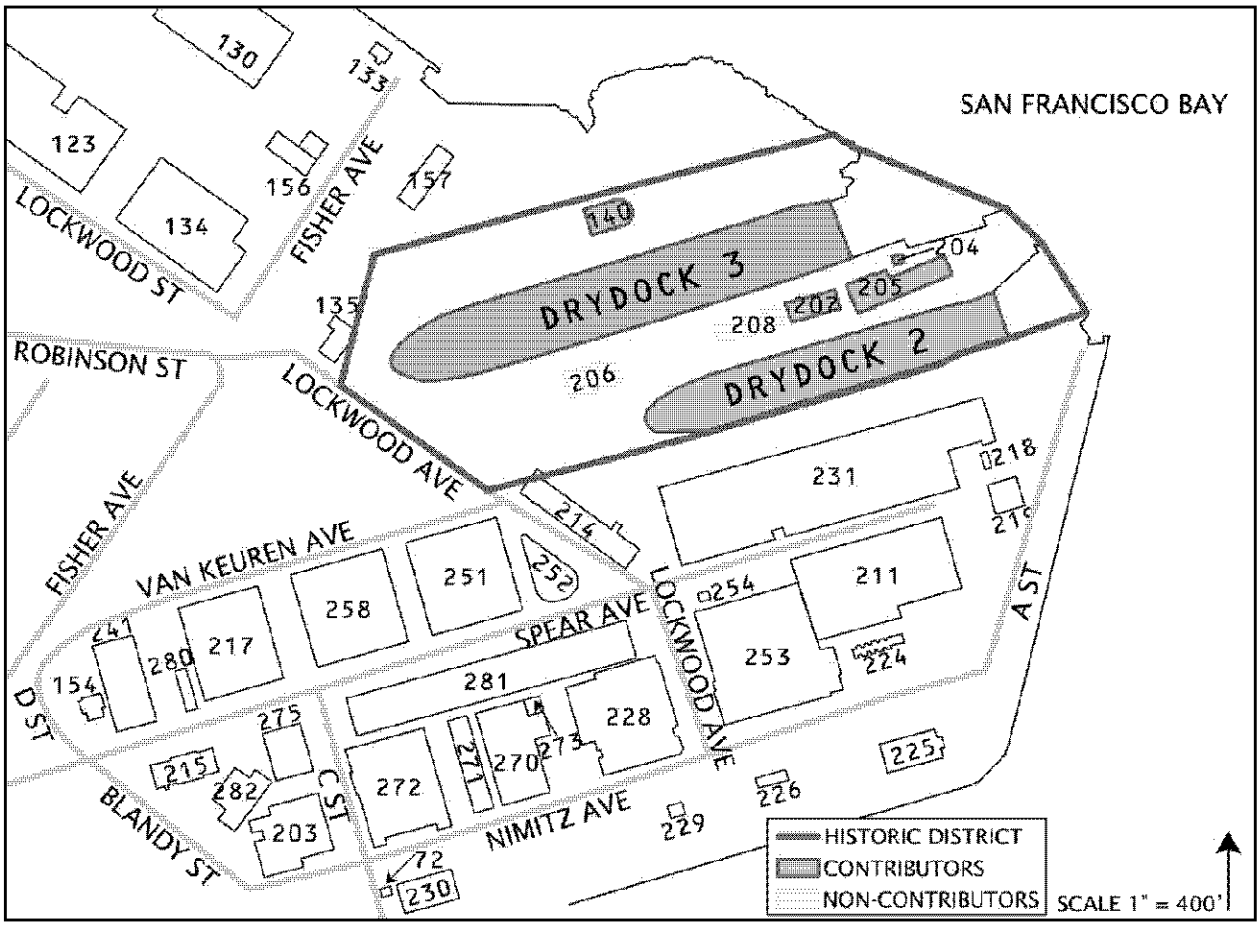
San Francisco Bay Marine Piling Committee of the American Wood-Preservers' Association. *San Francisco Bay Marine Piling Survey: Second Annual Progress Report, January 15, 1922.* San Francisco: San Francisco Bay Marine Piling Committee, January 15, 1922. Available at www.archive.org/stream/sanfranciscobaym00sanfrich/sanfranciscobaym00sanfrich_djvu.txt

USS Ohio at dry dock at Hunter's Point, San Francisco, Calif., 19 July 1904. Photo no. NH 60224. Available at www.history.navy.mil/photos/sh-usn/usnsh-o/bb12.htm.

LOCATION MAP:



SITE MAP:


SAN FRANCISCO BAY
DRYDOCK 3
DRYDOCK 2
LOCKWOOD ST
FISHER AVE
ROBINSON ST
LOCKWOOD AVE
VAN KEUREN AVE
SPEAR AVE
NIMITZ AVE
BLANDY ST
D ST
C ST
A ST
130
133
123
134
156
157
140
204
135
205
202
208
206
231
218
214
216
251
252
258
217
241
280
154
281
228
275
215
282
203
272
271
270
273
253
254
211
224
225
226
229
72
230
HISTORIC DISTRICT
CONTRIBUTORS
NON-CONTRIBUTORS
SCALE 1" = 400'